REMARKS

The present response accompanies a Request for Continued Examination (RCE). After entry of the foregoing claim amendments, claims 1-22 will be pending in the application. Claims 1-22 have been amended. Support for the claim amendments may be found throughout the specification, such as paragraph [0007], for example.

Claims 1-6, 8-13 and 15-21 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,564,203 ("Krishnaprasad") in view of U.S. Patent No. 6,892,204 ("Haas"). Claims 7, 14 and 22 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Krishnaprasad in view of Haas and in further view of U.S. Patent No. 6,122,644 ("Graefe").

Applicants gratefully acknowledge the time and attention afforded by Examiner Ortiz during a telephonic interview on September 19, 2006, where Applicants' representatives and Examiner Ortiz discussed the cited references, the claimed invention, and the non-anticipatory and non-obvious nature of the claims in view of the references. As will be further discussed below, Examiner Ortiz agreed that Krishnaprasad and Haas do not disclose, teach, or suggest, either alone or in combination, every limitation recited in independent claims 1, 8, 15 and 18, as amended, and noted that a further search would be necessary. In addition, Examiner Ortiz requested that Applicants amend the preambles of claims 2-7, 9-14, 16, 17 and 19-22 to correct a specified informality. Applicants have amended claims 2-7, 9-14, 16, 17 and 19-22 as suggested by Examiner Ortiz.

Independent claims 1, 8, 15 and 18 have been amended to further clarify the claimed invention. As amended, claims 1, 8, 15 and 18 recite, in part, a data structure that aggregates changes to values at arbitrary levels of a hierarchy of a complex structured column (see claims 1 and 15) and a data structure that represents values in a complex structured type column as an aggregation of changes to the values at arbitrary levels of a hierarchy of the complex structured type column (see claims 8 and 18). The data structure enables one to specify updates to data embedded at arbitrary levels of depth in the hierarchy. For example, FIG. 3 of the present specification depicts an example table with a nested collection in the Addresses column:

EmployeeID	FirstName	LastName	Salary	Addresses	
1233	John	Smith	50000	30 Jump Street, Seattle, WA, 98000	206-123-45-60
					206-123-45-61
1234	Tom	Brown	60000	20 Jump Street, Portland, OR, 97000	207-123-45-67
					207-123-45-66
				31 Pine Street, Seattle, WA, 98000	208-123-45-68
					208-123-45-69
1235	Robert	White	40000	32 Pine Street, Seattle, WA, 98000	206-123-45-79
					206-123-45-80
				33 Pine Street, Seattle, WA, 98000	206-123-45-81

Thus, the table may have the following hierarchy:

EmployeeID

FirstName

LastName

Salary

Addresses

- Street
- City
- State
- ZipCode
- PhoneNos
  - AreaCode
  - Number
  - Extension

(*Specification* at ¶ [0030]).

An UPDATE statement according to one embodiment of the invention may take the form:

```
UPDATE Employees
SET   Salary = Salary * 1.1,
      (UPDATE Addresses A(addr)
       SET   addr.ZipCode = '98074',
             (UPDATE addr.PhoneNos P(phone)
              SET phone.AreaCode = '425'
              WHERE phone.AreaCode = '206')
```

WHERE addr.State = 'WA')

WHERE EmpID = 1234 OR EmpID = 1235

(*Id.* at ¶ [0038]).

The above statement may update the salary, ZipCode for addresses in Washington state, and the AreaCode of certain phone numbers with respect to EmployeeIDs 1234 and 1235. (*Id.*). Thus, as illustrated in FIG. 3, scalar values in 3 arbitrary levels of the hierarchy may be modified:

EmployeeID	FirstName	LastName	Salary	Addresses	
1233	John	Smith	50000	30 Jump Street, Seattle, WA, 98000	206-123-45-60
					206-123-45-61
1234	Tom	Brown	66000	20 Jump Street, Portland, OR, 97000	207-123-45-67
					207-123-45-66
				31 Pine Street, Seattle, WA, 98074	425-123-45-68
					208-123-45-69
1235	Robert	White	44000	32 Pine Street, Seattle, WA, 98074	425-123-45-79
					425-123-45-80
				33 Pine Street, Seattle, WA, 98074	425-123-45-81

Accordingly, modifications to specified scalar values in the hierarchy may be made without necessarily affecting all the data in a row. For example, as illustrated above, the salary of employee Robert White may be updated without affecting other data, such as his employee ID number.

During the interview, Applicants reiterated many of the remarks presented in Applicants' previous response (*see* Applicants' Response dated May 1, 2006, at pages 8 and 9). Applicants explained that, as noted in the present specification, Krishnaprasad describes a technique for updating data that logically resides in one or more nested collections in a nested collection column (*Id.* at ¶ [0004]). More specifically, Applicants submitted that Krishnaprasad's technique updates an entire row of data at a time (*i.e.*, implements a trigger code that is designed to fire when a row of a database table is updated, inserted, or deleted) (*Id.*). For example, Krishnaprasad states:

> The following statement (Q1) is an example of the type of query that could be handled by such instead-of triggers:
>
> (Q1) INSERT INTO TABLE(SELECT emplist FROM dept_view WHERE deptno=10) VALUES (200, 'Jack', 89999);
>
> This query attempts to insert a row, through the view dept_view, into a nested collection. The specific nested collection into which the row

> is to be inserted is the nested collection contained in the emplist column of the dept_view row for the department with deptno=10. *The row to be inserted has values for each field of the nested collection.* In the present example, each element in the nested collection is an emp_t object. Consequently, each element of the nested collection has fields eno, ename, and salary. Query Q1 attempt[s] to insert a row where the values 200, 'Jack', and 89999 are respectively supplied for the fields eno, ename, and salary.

(Krishnaprasad at col. 6, ll. 7-24) (emphasis added).

Accordingly, Applicants respectfully submitted during the interview that Krishnaprasad does not disclose, teach, or suggest a data structure that aggregates changes to values at arbitrary levels of a hierarchy of a complex structured column (see claims 1 and 15) or a data structure that represents values in a complex structured type column as an aggregation of changes to the values at arbitrary levels of a hierarchy of the complex structured type column (see claims 8 and 18). Applicants further submitted that Haas does not supply the missing teachings of Krishanaprasad. Examiner Ortiz agreed with Applicants' contentions and noted that this feature could not be found in the cited references and that a further search would be necessary.

For at least the foregoing reasons, Applicants respectfully submit that independent claims 1, 8, 15 and 18 patentably define over the cited references and, therefore, are allowable. As claims 2-7 depend from claim 1, claims 9-14 depend from claim 8, claims 16 and 17 depend from claim 15, and claims 19-22 depend from claim 18, Applicants further

submit that the dependent claims are likewise allowable. Accordingly, reconsideration of the present application and issuance of a Notice of Allowability are respectfully requested.

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